

Leibniz's exchange of views with Bayle

G. W. Leibniz and Pierre Bayle

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[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth. Longer omissions are reported between brackets in normal-sized type.

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Glossary

animal: This always translates ‘animal’, with the understanding that humans are animals. See **beast**.

animate: As used on page 17, the word means not merely ‘alive’ but ‘having a soul’.

appetite: In Leibniz’s usage, a soul’s *appetit* is its tendency to change from one state into another; a *désir* is an instance of appetite of which the soul in question is aware.

beast: This translates *bête* and it means ‘non-human animal’ or ‘animal lower in the scale than humans’. See **animal**.

deus ex machina: Literally ‘a god out of the machine’; referring to a god that is (in a certain kind of drama) trundled on-stage by the back-stage machinery; metaphorically meaning ‘an arbitrary and ungrounded “fix” for a defective theory’. When this expression is used on page 6 the ‘fix’ is indeed something that involves God, but that is not essential.

extraordinarily: As used on page 6 and elsewhere, this means not merely ‘unusual’ but ‘outside the God-ordained order of things’, i.e. ‘miraculous’.

entelechy: Leibniz often refers to his monads or simple substances as ‘entelechies’, especially in contexts where he wants to emphasize the idea of monads as *active* [see for example page 28].

faculty: This means, roughly, ‘ability’. But Bayle [see page 17] and Leibniz [see page 14] both tend to think of x’s ‘faculty’ for doing A as a *basic* ability to do A, one that closes off any enquiry into how or through what mechanism x can do A.

mind: This translates *esprit*, which can also mean ‘spirit’. Various contexts show that Leibniz here thinks of minds as a species of souls, namely the species that engage in reasoning. Bayle seems rather to equate *esprit* and *âme* (= soul).

mental state: This translates *sentiment* in occurrences where it doesn’t obviously mean ‘belief’ or ‘opinion’ or ‘feeling’.

pièce: Leibniz uses this word in its sense of ‘component (in an organised whole)’; thus the *pièces* of a clock include wheels and cogs, but not the microscopically small portions of metal of which they are composed. On page 23 Leibniz is metaphorically likening a music book to a machine.

point of view: This is the only possible translation of Leibniz’s *point de vue*, but the phrase has misled many English translators. Leibniz hardly ever, anywhere, speaks of a substance’s perceiving the world *from* its point of view; nearly always he says *according to* (*selon* or *suivant*) its point of view. He thinks of a substance’s point of view not as a location, or as something with a location, but rather as some kind logical construct out of all the perceptions that the substance has. See page 4 where he writes that the impressions things make on a substance’s organic body ‘constitute its point of view’.

school: By ‘the Schools’ Leibniz meant something like ‘the philosophy departments that are pretty entirely under Aristotle’s influence; and by ‘the School’ he meant the totality of such departments.

simple: As applied to souls etc., ‘simple’ means ‘having no parts’.

source of energy: This translates *principe* when that is used in what was in early modern times its most common meaning, namely as ‘source’ or ‘cause’.

spontaneous: In the present work this means ‘not caused from the outside’, and that is *all* it means.

Note H to Bayle's article 'Rorarius' (1697) and Leibniz's private comments on it

[Jerome Rorarius (1485–1566) wrote a book arguing that animals use reason better than man does; it was published in 1654; and Pierre Bayle discussed it in his great *Dictionnaire historique et critique* (1697), which was not a dictionary (in our sense) but an encyclopedia. The opening part of that discussion drew Leibniz's attention, and he wrote three comments on it, two on the main text and one on Note E. These comments are presented here intercalated with the Bayle passages that they are addressed to. Bayle then mentions Leibniz by name, calling him 'a great mind in Germany' (in the second edition he upped this to 'one of the greatest minds in Europe'), who has understood these problems and has provided some insights that are worth developing'. He then points to his Note H, which is purely about Leibniz. Leibniz privately commented on this also, and those comments are again interleaved with the corresponding passages from Bayle.]

Bayle:

Rorarius's book. . . presents many remarkable facts about the doings of animals. . . . They pose a challenge both to

- the Cartesian, who deny that beasts have souls, and
- the Aristotelians, who hold that beasts have a soul which is capable of mental states, memories, and passions, but not reason.

It's a shame that Descartes's view about this is so hard to maintain and so implausible, because its truth—if it were true—would be a great help to the true faith. . . . It doesn't generate the common opinion's dangerous consequences.

Leibniz:

That is, the opinion that the souls of beasts are capable of mental states and yet are mortal. Bayle sees this as 'dangerous' because he takes it to imply that if the soul

of a beast is capable of mental states then it necessarily follows that either •it is immaterial or •matter is capable of mental states. In fact, if it is immaterial then it must also be immortal, because the only alternative to this is to suppose that an immaterial substance can perish [*perir* = go out of existence]. But if we allow that matter has mental states or that an immaterial thing can perish, either way we'll wreck the natural proof of the immortality of our souls. My own view is that the soul of a beast does have mental states but also that it is immaterial and, indeed, can't perish naturally.

Bayle:

For a long time people held that the souls of beasts were capable of reasoning. The philosophers of the School [see Glossary] went thoroughly wrong when they denied this, thinking that their denial would keep them out of intellectual trouble. These gentlemen are well supplied with distinctions and exceptions, and with the *nerve* to lay it down that the souls of beasts won't overstep certain limits that they, the scholastics, have prescribed for them. But all that emerges from their confused and impenetrable verbiage is that there are two species of souls, and that beasts have one while humans have the other. And it doesn't seem likely that they'll ever come up with a better explanation than the one they have been giving up to now. . . .

Leibniz:

I have spent much time working on providing what Bayle asks for here, and some able people think that I have succeeded. I'll try to explain through a comparison. In the medical profession there are three kinds of practitioner:

- (1) **Empirics** don't go in for the pursuit of reasons or causes. All they want is empirical facts that will enable them to say 'This was helpful (or harmful), so it might be so again in the next case of this sort'.
- (2) **Simple-method physicians** attend only to empirical facts which they think they have traced back to reasons or causes.
- (3) **Reasonable physicians** who have tried to perfect—round off, complete—experience by combining it with the search for causes.

[In case that isn't clear: Leibniz is saying that (2) think that the truth about causes is somehow contained in the set of empirical facts, while (3) think that it is something extra.] I have shown that •we can explain all the behaviour of beasts by supposing them to be merely (1) empirics, and that •the thought-sequences that they go through •don't have to be instances of *reasoning*, because they• can be explained purely in terms of *memory*: remembering that experiences •similar to this one have previously been followed by F events, the animal expects this one to be followed by an F event also. Men also very often conduct such •similarity-inferences and find them to be successful; but because they aren't necessary they very often fail, in cases where there is a •superficial• similarity but no •underlying• sameness of cause. So it's an advantage for a man to be not merely •an empiric who is equipped with memory that he can use in making inductions but also •a reasoner who can construct strictly rigorous logical arguments and can know necessary truths. . . . That's what makes me capable of demonstrative sciences, and there's not a sliver of evidence that beasts are capable of those. All that beasts are capable of—or men when they behave like empirics—are universal generalisations based on inductions from experience, and those are never perfectly sure because the *reason* for the generalisation isn't known.

•NOW A BIT FROM NOTE E•

Bayle:

One is overcome with horror when one thinks about the consequences of this doctrine:

The soul of a man doesn't differ substantially from the soul of a beast; they belong to the same species; the human soul acquires more insights than the other, but those are only contingent advantages that depend on the way humans have set things up in the world.

This doctrine is an unavoidable consequence of what the scholastics teach about the knowledge of beasts. It implies that (a) if beasts' souls are material or mortal, then so are human souls; and that (b) if the human soul is an immaterial and immortal substance then so are the souls of beasts. Either way, the upshot is horrible. (a) If we avoid crediting the souls of beasts with immortality by supposing that the human soul dies when its body dies, that overturns the doctrine of the after-life and undermines the foundation of religion; and (b) if we retain for ourselves the privilege of immortality by granting it also to the beasts, what chasms will we find ourselves in? what will we do with so many immortal souls? will they also have a paradise and a hell? will they pass from one body to another? will they be annihilated when the beasts die? will God continually create an infinity of minds only to sink them back into nothingness soon thereafter? how many insects are there that live for only a few days? Don't think that •for the truth of the hypothesis I am criticising• all that's needed is the creation of souls for the beasts that we have encountered; there are ever so many more that we haven't encountered. The microscope shows us thousands of them in a drop of liquid, and many more would show up if we had better microscopes. And don't think •you can get the number down by supposing• that insects are mere machines •and so don't have souls•. The 'machine'

diagnosis fits the behaviour of dogs better than the behaviour of ants and bees. There may be more mind and more reason in microscopically small animals than in bigger ones.

Leibniz:

These alleged double horrors shouldn't scare us. ·I have three points to make about them·. **(1)** I have shown that there is an *essential difference* between beasts' souls and *minds* [see Glossary], which are the kind of soul that engages in reasoning. [Leibniz now repeats, briefly, what his preceding note said about different ways of reaching conclusions.] **(2)** Granted: all souls are immaterial and indestructible, those of beasts as well as those of men. But that's not to grant that a beast's soul qualifies for the label 'mind'. It has mental states but it doesn't have understanding, which involves knowledge of reasons; and that means that it doesn't have liberty. Also, the indestructibility of a beast's soul is very different from the immortality of a reasoning soul. Every soul retains its substance, but only minds retain their personal identity—i.e. their knowledge of the *I* through which I know myself as the same person, which is what makes me susceptible to reward or punishment. [The shift from 'they' to 'I' in mid-sentence is Leibniz's.] **(3)** I agree that there would be bad effects from the conclusion that *our souls are not* immaterial and indestructible, but I don't see anything 'horrible' in the view that *all souls are* immaterial and indestructible. The view that souls are simple [see Glossary] substances, and thus the genuine *atoms of nature* and therefore as indestructible as the material atoms that Democritus believed in and that Gassendi has lately revived—where's the harm in that? 'What will we do with so many souls?' asks Bayle. Well, what does anyone 'do with' material atoms? According to Democritus material atoms enter into the make-up of corporeal substances; according to me souls do exactly that; there's no need to suppose that they are ever annihilated. It

doesn't have to be the case that there is a heaven and hell for them—i.e. for the souls of beasts—or that they pass from one body to another. That is enough to meet Bayle's objection; but I have cleared up this issue at a deeper level by showing that what lasts for ever is not just the soul but the whole animal. . . .

Bayle:

Leibniz, a great mind in Germany who has understood these problems has provided some insights that are worth developing. I'll say a bit about them, if only to exhibit some doubts that I have.

·NOW WE COME TO NOTE H·

Leibniz agrees with the view of some modern philosophers that animals are already organically structured in the seed; and he also thinks that unaided matter can't constitute a true unity, and therefore that each animal is unified by a •form or •soul, which is a simple, indivisible being that is truly *one*. He also holds that this form never leaves the thing whose form it is, which means that strictly speaking nothing in nature *dies* and no living thing *begins to exist*. He makes the soul of man an exception to all this; he sets it apart.

Leibniz:

That's because these reasoning substances have a double status and a double role—

- one physical, like all animals, as a consequence of their bodily mechanism, and
- the other moral, which gives them a social relationship with God, as citizens of God's city.

It's because of these that they retain not only their substance but also their *personal* identity and their knowledge of who they are.

Bayle:

This theory. . . rescues us from one part of the difficulty; we no longer need to reply to the crippling objections that are made against the scholastics:

A beast's soul is a distinct substance from its body; so it must therefore be produced by creation, and destroyed by annihilation. So you have to conclude that heat has the power to create souls and to annihilate them, and what could be more absurd than that? (In Egypt they hatch eggs by putting them in a slightly warmed oven; if it too warm, the eggs die.)

The Aristotelians' replies to this objection are not worth reporting. . . . Their only effect is to convince us that from their point of view the objection is unanswerable. They are no better at climbing out of the chasm that they are thrown into by the demand that they find some sense and some shadow of reason in this continual production of an almost infinite number of substances, which are totally destroyed a few days later, even though they are much more noble and much more excellent than matter, which always remains in existence.

Leibniz's theory parries all these blows, for it would have us believe **(i)** that at the beginning of the world God created the forms of all bodies, and hence all the souls of the beasts; and **(ii)** from then on these souls continue in existence for ever, inseparably united with the first organic body in which God lodged them.

Leibniz:

It's not that a certain mass of matter always remains inseparable from the animal or the soul, but rather that certain organs always remain, at least by the replacement of portions of matter with other, similar portions of matter—like a river: water flows in as water flows out, but it continues to be the same river.

Bayle:

That rescues us from metempsychosis (according to which the soul passes all at once into another body that is quite differently organized), a concept under which we would otherwise have had to take shelter. So that it can be seen whether I have understood his thought correctly, I shall here expound some of it.

There are some problematic things in Leibniz's theory, even though they show the breadth and power of his genius. For example, he holds that the soul of a dog operates independently of its body:

. . . that everything in it arises from its own nature, with a perfect spontaneity [see Glossary] as regards itself, and yet with a perfect conformity to things outside it. And. . . thus its internal perceptions must arise from its own original constitution, that is from its representational nature (its ability to express external things that are in relation with its organs), which it has had since its creation, and which constitutes its individual character.

From this it follows that the dog's soul would feel hunger and thirst at certain times, even if there were no bodies in the universe; even if 'there existed nothing but God and that soul'.

Leibniz:

I meant this only as a fiction, which is not compatible with the order of things but which might help make my thought more intelligible. For God so made the soul that it must correspond to everything external to it, and indeed represent it, in accordance with the impressions that things make on its organic body, which constitute its point of view [see Glossary]. If the motions in the body were different from the ones that usually accompany the feeling of hunger or thirst, the soul wouldn't have that feeling. It is true that if God were

to decide to destroy everything external to the soul, but to keep the soul in isolation, with properties and states, *they* would bring it to have the same sensations as before, just as if bodies were still there, this being merely a kind of dream. But this is contrary to the designs of God, who wanted the soul to agree with things external to it; and it's clear that this pre-established harmony brushes aside that fiction: it is metaphysically possible, but it doesn't agree with the facts or with their causes.

Bayle:

He has explained his thinking by the example of two clocks which are perfectly synchronized: that is, he suggests that because of the particular laws which control its operation, the soul will feel hunger at a certain time, and because of the particular laws which govern the movement of matter, the body which is united to that soul will be modified at the same time, in the way it is modified when the soul feels hunger.

Leibniz:

I have explained the soul's agreement with the body by comparing it with the agreement between two differently structured clocks that always agree in what they say the time is. There are three ways for this to happen;

- (1) Connecting the clocks with one another, so that their pendulums have to swing at the same rate;
- (2) hiring a man to keep them in agreement;
- (3) constructing each of them so perfectly that each keeps time accurately, so that they stay in harmony with one another through their own structures. There's no doubt that this is better than either of the other two.

There is a corresponding trio of accounts that might be given for the agreement between the soul and the body:

- (1) they influence one another [for an important explanation of what Leibniz means by *influencer*, see page 9 below];
- (2) God continually keeps them in agreement with one another;
- (3) each of these two beings is so perfectly ordered that they stay in harmony with one another by virtue of their separate natures.

Of these, (1) is what is commonly believed in the Schools, but it is inexplicable. (2) is the 'occasionalist' theory of the matter—the state of one of the two is God's 'occasion' for putting the other into a corresponding state, a perpetual miracle that wouldn't fit with God's wisdom or with the order of things. (3) is the most beautiful of the three, and the most worthy of God; it is my system of *pre-established harmony*.

Bayle:

Before preferring his system to the theory of occasional causes, I'll wait for its able author complete it. 'As it stands', this series of spontaneous internal actions that result in a dog's soul feeling pain immediately after feeling pleasure, even if it were all alone in the universe, *I don't get it*. I can understand why a dog goes straight from pleasure to pain when, while it is hungrily eating some bread, it is suddenly hit with a stick; but its soul's being so constructed that it would have felt pain at that very moment even if it hadn't been hit and had continued to eat the bread—*that's what I don't understand*. . . .

Leibniz:

What I say, properly understood, is *not* that. The pre-established harmony means this:

Pain enters a dog's soul when its body is hit. And if it weren't about to be hit at time T, God wouldn't have launched it with a constitution that would produce in its soul at T •that pain and •that representation or

perception corresponding to the stick's impact. But if (though this is impossible) God had changed his mind and altered the events in the material world in such a way that the blow didn't fall, without altering the nature of the soul and the natural course of events within it, then the soul *would* feel what corresponds to the blow even though its body never received it.

But Bayle says. . . that he doesn't understand how the dog's soul, which experiences pleasure while the dog is eating hungrily, suddenly passes to pain without **(1)** the stick's being the cause (as the Schools say), and without **(2)** any particular action by God (as the occasionalists say). But nor does he understand **(1)** how the stick can act causally on the soul, or **(2)** how God performs the miraculous operation through which the body and the soul continually agree. Whereas I have sought to explain how this agreement happens •not miraculously but •naturally, by supposing that each soul is a living mirror representing the universe according to its point of view, and above all representing its body. Thus the causes of the stick's movement—

i.e. the man stationed behind the dog, preparing to hit it while it eats, and the whole history of the material world that has led to this man's acting in this way,

are also represented in the dog's soul from the outset. These perceptions are exactly [*exactement*] true, but are weak—they consist of small confused [*confuses*] perceptions—corresponding to the tiny effects that these events have on the dog's body. [Leibniz says not that they are tiny but that they 'imperceptible', but he obviously can't mean that strictly and literally.] And although the dog *has* these small confused perceptions it isn't aware of having them. And just as this sequence of material events leads in time to a smart blow on the dog's rump, the corresponding sequence, in the dog's soul, of representations of these events lead in time to a representation

of the blow of the stick; and because that representation is prominent and strong. . . the dog is clearly aware of it, and this awareness is what constitutes its pain. So we don't have to imagine that in this situation the dog's soul passes from pleasure to pain arbitrarily, and without any internal reason.

Bayle:

I also find the spontaneity [see Glossary] of this soul wholly incompatible with its feelings of pain, and in general with all the perceptions it has that it finds unpleasant. •Why would it put itself into a state that it hates being in?•

Leibniz:

This objection of Bayle's is based on the premise that if it's going to be unpleasant to be in state S we won't spontaneously put ourselves into S.

I accept this for cases where *we know* that it will be unpleasant, but in our present case the dog doesn't know this; and that means that although the move into state S is spontaneous it isn't voluntary. The cause of the change is *in* the dog—the state of its soul moves imperceptibly towards giving it pain—but this is happening without the dog's knowledge and without its wanting it to happen. Quite generally, . . . , if event E_c causes event E_e , the representation of E_c causes the representation of E_e

Bayle:

Also, this able man's dislike of the Cartesian system seems to be based on an error. It isn't true (as he thinks it is) that the system of occasional causes, with its two-way dependence of body and soul, credits God with the *miraculous* interventions of a *deus ex machina*. [see Glossary] God intervenes between body and soul only •according to general laws, so in these interventions he never acts extraordinarily [see Glossary].

Leibniz:

I have several reasons for disliking the occasionalist system; this is one of them. An action isn't saved from being miraculous merely by falling under some general law. If that law isn't grounded in the natures of things, all the events falling under it are miracles. If for example God made a law requiring a planet to go around the sun, without setting up something that would *make* this happen, I maintain that the planet couldn't obey that law unless God kept intervening personally to make that happen. So it's not enough for God simply to *ordain* •that the body is to obey the soul and •that the soul is to have perceptions of everything that happens in the body; he must also give them some means for doing these things, and I have explained what these means are.

Bayle:

Does the internal active power that Leibniz thinks is built into the structures of bodies *know* what series of actions it is going to produce? Surely not! We know from experience that we don't know that we'll have such and such an experience an hour from now ·let alone knowing what will happen throughout the rest of our lives·. So the bodies would have to act under the direction of some external cause; and wouldn't that be a *deus ex machina*, just as in the system of occasional causes?

[Note H's last paragraph isn't discussed in Leibniz's private comments, and is given in full ('Finally...') on page 10 below.]

Leibniz's letter to a learned journal replying to Bayle's Note H (1698)

M. Bayle has had trouble with the theory I proposed to explain the soul's union with the body, and I now take the liberty of sending you this clarification to remove his difficulties. [Leibniz adds praise for Bayle, and for his courteous tone in writing against Leibniz's system. Then:] He doesn't reject what I have said about the conservation of souls and even of animals, but he doesn't yet seem satisfied with my attempt to explain the union and the relations between the soul and the body. . . .

Here are his words, which seem to indicate what he found difficulty with:

'I can't understand the series of spontaneous internal events that could make a dog's soul feel pain immediately after having felt pleasure, even if it were all alone in the universe.'

My answer: When I said that the soul would still feel everything that it actually feels even if it and God were the only things in the world, I was only employing a fiction ·about there being only God and one soul·. I was supposing something that couldn't happen naturally, just to make the point that the soul's various states are only consequences of what is already within it. Bayle says that he doesn't

understand this—but why? Perhaps it's because of things he says later on, or perhaps it is meant to be right there in the example of the spontaneous shift from pleasure to pain. If the latter, then he may be suggesting that such a shift conflicts with the axiom that *a thing's state won't change unless something occurs to make it change*, and that therefore an animal that experiences pleasure will have it for ever if nothing external makes it move on to pain. Anyway, I agree with the axiom; indeed I claim that it supports me, for it's one of the things that my work is based on.

Don't we infer from this axiom that if there's no outside interference not only will a body at rest always remain at rest but also a moving body will always move in the same way, i.e. at that speed and in that direction? A thing left to itself will remain in the state it is in; and if that state is one of change, the thing will continue to change in the same way, i.e. always following the same law. Now, according to me it is the nature of a created substance to change continually in accordance with a certain law or order, which leads it *spontaneously*. . . through all its states, in such a way that someone who sees everything—namely, God—sees in the thing's present state all its past and future states. And this law of order, which makes each particular substance the individual that it is, corresponds exactly to what happens in every other substance and in the universe as a whole. It wouldn't be going too far to claim that I can *demonstrate* all this; but all that matters just now is to show that this theory is possible, and that it could explain the given facts. So in this way the law of change in the animal's substance takes it from pleasure to pain at the very moment when there is so to speak a *bump* in the continuity of the processes in its body; because the law of this animal's indivisible substance—its soul—is to represent what happens in its body, just as we know from our own cases, and indeed through its relation to

the body to represent in some way everything that happens in the world. Substantial unities are nothing but different concentrations of the universe—different versions of the universe-in-a-nutshell—which they represent in accordance with the different points of view that distinguish them from one another.

Bayle goes on:

'I can understand why a dog passes immediately from pleasure to pain when it is hit with a stick while hungrily eating. . .'

I wonder if he does understand this so well! Bayle knows as well as anyone that this is the crucial problem: *how to explain why what happens in the body makes a change in the soul*, and that this is what pushed the defenders of 'occasional causes' to fall back on the theory that God must be continually taking care to represent in the soul changes occurring in the body. Rather than that, I believe that it is the soul's own God-given nature to represent to itself, in accordance with its own laws, what happens in the organs of the body. He continues:

' . . . but its soul's being so constructed that it would have felt pain at that very moment even if it hadn't been hit and had continued to eat the bread—that's what I don't understand.'

And it's what I didn't say, so far as I can remember. Speaking like that is engaging in a metaphysical fiction, like saying 'Suppose God created a vacuum by annihilating a certain body'; these two fictions are equally against the order of things. The soul was given from the outset a nature that would make it represent the changes in matter in order as they occurred, so the case imagined here—pain without bodily trauma—could never occur in the natural course of things. God *could* have given each substance its own series of particular states independently of all the others; but then

he would be making as many unconnected worlds as there are substances. When I call them 'worlds' I'm speaking as we do when we say that in dreaming one is in 'a world of one's own', and that on waking up one enters 'the common world'. (Actually, dreams *are* related to the states of the body, but less clearly than waking states.) Now back to Bayle:

'I also find the spontaneity of this soul wholly incompatible with its feelings of pain, and in general with all the perceptions it has that it finds unpleasant.'

There would indeed be an incompatibility if spontaneity [see Glossary] were the same as voluntariness. Everything voluntary is spontaneous, but some spontaneous actions aren't voluntary because they aren't *chosen*. It's not up to the soul to choose to put itself into states that are pleasant, because the state it *is* in depends on the ones it *has been* in.

Bayle continues:

'Also, this able man's dislike of the Cartesian system seems to be based on an error. It isn't true (as he thinks it is) that the system of occasional causes, with its two-way dependence of body and soul, credits God with the *miraculous* interventions of a *deus ex machina*. God intervenes only according to general laws, so these interventions are never extraordinary.'

That's not the only reason why I don't like the Cartesian system; and if you attend a little to my system you'll see that I found *in it* reasons to adopt it. Even if the occasional-causes theory didn't involve miracles, it seems to me that mine would still have other advantages. I have said that we can think of three systems for explaining the relations we find between soul and body: **(1)** The system of *influence*, with this understood literally as a *flow* from one into the other.

[The origin of the French *influence* and of the English word spelled the same way is Latin meaning 'flow in'. Leibniz is referring to a view of causation which goes like this (stated in terms of one example). When

a moving body *x* collides with a stationary body *y*, causing it to start moving, what happens is that *some of x's motion* is passed across from *x* to *y*, or flows from *x* to *y*. The idea is that when a body moves, three items are involved:

- this body (a concrete particular),
- motion (an abstract universal), and
- the motion of this body (an abstract particular).

And the 'influence' theory of causation holds that it is (some of) the third of those items that passes across from one body to another in a collision. Leibniz is also referring to the third kind of item when he refers to a 'chimerical scholastic species' on page 30.]

This is the system of the scholastics, and I agree with the Cartesians that it is impossible because the notion of abstract particulars, such as movable portions of motion, doesn't make sense. **(2)** The system of the perpetual caretaker, who represents in one what happens in the other, rather like a man whose job is to synchronize two inferior clocks that can't keep the same time by themselves. This is the system of occasional causes. **(3)** The theory according to which two substances naturally agree, as would two perfectly accurate clocks. I find this as possible as that of the caretaker, and more worthy of the creator of these substances, whether clocks or other machines. Still, let's see whether the occasional-causes theory really does involve a perpetual miracle. Bayle says that it doesn't, because it holds that God acts only according to general laws. I agree that he does, but in my view that isn't enough to get miracles out of the story. Even if God produced them all the time, they would still be miracles, if 'miracle' is understood not as 'the man in the street understand it but in the way philosophy needs to understand it—i.e. not as 'something rare and marvellous' but as 'something that exceeds the power of created things'. It's not enough to say that God has made a general law; in addition to his laying down the law there has to be a natural way of carrying it out; that is, what happens

must be explicable in terms of the natures that God has given to things. The laws of nature aren't as arbitrary and groundless as many think. If, for example, God decreed that

All bodies are to have a tendency to move in circles with radii proportional to their size,

either •there would be some way for this to happen through simpler laws, or •God would be doing this miraculously—or at least by angels expressly given this job, a bit like the angels that used to be assigned to •maintaining the orbits of• the celestial spheres. [By 'simpler laws' Leibniz means laws simpler than the one that can be read off from God's supposed decree. He evidently holds that a law needs to be 'simple' if it is to be sufficiently basic to count as a part or aspect of the 'nature' of the thing that obeys it.] It would be the same if someone said that God has given each body a natural basic *weight* by which it tends to move towards the centre of its globe without being pushed by other bodies; for in my view this system would also need a perpetual miracle, or at least the help of angels!

'Does the internal active power that is built into the structures of bodies *know* what series of actions it is going to produce? Surely not! We know from experience that we don't know that we'll have such and such an experience an hour from now.'

I reply that this power—or rather this soul or form—doesn't know them distinctly, but senses them confusedly. Each substance contains traces of everything that ever did or ever will happen to it; but we're prevented from sorting these perceptions out from one another by the sheer number of them, just as I can't pick out one voice from the loud and confused noise of a crowd.

'So the bodies would have to act under the direction of some external cause; and wouldn't that be a *deus ex machina*, just as in the system of occasional causes?

My preceding reply blocks this inference. The present state of each substance is a natural consequence of its preceding state, but only an infinite intelligence could see that consequence—i.e. see why and how it follows—because it involves the whole universe; this holds for souls as well as for every portion of matter.

Bayle concludes with these words:

'Finally, Leibniz with good reason thinks that all souls are simple [see Glossary] and indivisible, so how can they be compared to clocks? How can their original constitution enable them to do different things through the spontaneous activity put into them by their creator? It seems utterly obvious that a simple being will always act in the same way unless some outside cause interferes with it. If it were put together as a machine is put together out of cogs and pulleys and wheels, it could do different things because at any moment one part might move in a way that affects what the other parts are doing. But where would you find, in a unitary substance, the cause of any change of activity?'

This objection is worthy of Bayle, I think, and is one of those most deserving of clarification. But I also think that if I hadn't provided for this from the outset, my system wouldn't be worth discussing. I likened the soul to a clock only in the ordered precision of its changes, which is imperfect even in the best clocks but perfect in God's products. The soul can be described as *a perfectly exact immaterial automaton*.

'A simple being will always act uniformly—to evaluate this we must make a distinction. **(1)** If 'act uniformly' means 'follow a single law of order or of continuation'—as with a series of numbers •generated by a single formula•—then I accept that all simple beings act uniformly, and so do all composite beings! **(2)** If 'act uniformly' means 'act in

the same way'—do the same thing—then I don't agree. Here's an example that explains the difference between these two senses: a parabolic motion is 'uniform' in the sense **(1)** because it is defined or generated by a single formula; but not in sense **(2)** because the segments of a parabola are not the same as each other, as are those of a straight line. [Leibniz adds 'in passing' some further remarks about parabolas; their interest is mathematical rather than philosophical.]

And there's also this: although the soul is simple, its state at each moment is composed of several simultaneous •perceptions, which for our purposes has the same effect as if it were composed of •working parts, like a machine. That's because each perception influences the ones that come after it, in conformity with a law of order; there are such laws for perceptions as much as for motions. There's nothing striking, original, or implausible about this view of mine. For centuries now, most philosophers have attributed thoughts to souls and to angels which they believe are completely incorporeal. . . ., so they too have accepted that simple beings—ones with no parts—can change spontaneously. I will add that the perceptions that occur in a single soul at a moment involve a truly infinite multitude of tiny indistinguishable mental states that will come into the open later on, so that we shouldn't be surprised by the infinite variety of what emerges in the course of time. This is all simply an upshot of the soul's representational nature: it has to express what *does* and indeed what *will* happen in its •associated• body—and even to express, in a way, what does or will happen in all other bodies, because of the connection or correspondence among all the parts of the world. Perhaps I needed only to say that God, having made material machines, could easily have made immaterial ones that represent them; but I wanted to explain things a little more fully.

One other point: I enjoyed reading what Bayle says in the article on Zeno in his *Dictionnaire*. He may be aware that what one can learn from Zeno squares with my system better than with any other; for the only *reality* in extension and in motion is the order and regular sequence of phenomena and perceptions that they are founded on. The main thing that ran platonists and the sceptics *and* their critics into trouble was their looking for more reality in external sensible things than that of regular phenomena. We conceive of extension by conceiving of an **order among coexistences**; we shouldn't think of extension or of *space* as though it were a substance. It is like *time*, which presents to the mind only an **order of changes**. As for motion, what is real in it is force or power, i.e. whatever it is in an item's present state that carries with it a future change. Apart from that there are only phenomena [e.g. At time t_n substance S has a perception of type P] and relations [e.g. At time t_n the perceptual states of substances S_1 and S_2 are alike in manner M]. Consideration of this system of mine helps us to see that when we dig down below the surface we find in most schools of philosophy more truth than we had expected:

- Sceptics: no substantial reality in sensible things;
- Pythagoreans and Platonists: everything comes down to harmonies and numbers, ideas and perceptions;
- Parmenides and Plotinus: the *one* and the *whole* (understood so as not to involve Spinozism);
- Stoics: connectedness, which is compatible with the spontaneity maintained by others;
- Cabbalists and the Hermetics: the vitalistic philosophy that attributes mental states to everything;
- Aristotle and the scholastics: 'forms' and 'entelechies' [see Glossary]; and yet also
- the view of Democritus and the moderns that mechanical explanations can be given for all particular phenomena;

and so on. [In a condensed and difficult sentence, Leibniz says that all these philosophical views can be seen, from the perspective provided by his philosophy, to hang together as mutually consistent parts of the whole truth. He likens this to a certain kind of trick picture which looks like a jumble when seen from straight on but which falls into place when viewed from a particular angle. [In Holbein's 'The Ambassadors' in London's National Gallery, a strange shape between the two men is, when viewed from the right, a perfectly painted skull.] Leibniz continues:] Our biggest fault has been sectarianism—we reject other people's views in a way that limits our own. Philosophers who emphasize 'forms' criticize the materialists

or the corpuscularians, and vice versa. Limits are wrongly set to how finely nature is divided up, as well as to how rich and beautiful it is, when people •postulate atoms and the void, and when they •imagine that there are certain basic elements (as even the Cartesians do) in place of true unities, and when they •fail to recognize the infinite in everything, and the exact expression ·or representation· of the greatest in the smallest, which is combined with each thing's tendency to develop in a perfectly orderly way. This orderly development is the most admirable and most handsome effect of a sovereign Source whose wisdom and goodness leave nothing more to be desired by those who understand its economy.